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# EFFECTS OF COMBAT SIMULATION ON THE WORK-RELATED MOTIVATION/SATISFACTION OF PARTICIPANTS

Robert H. Sulzen and Paul R. Bleda

ENGAGEMENT SIMULATION TECHNICAL AREA

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REALTRAIN can be distinguished from more conventional training along a number of dimensions, including the degree of operating constraints in the exercises, type of casualty assessment, nature of evaluative feedback, and sequence of training procedures.

A paper-and-pencil instrument was constructed that measured six different dimensions of job-related motivation and satisfaction. This instrument was administered to soldiers before and after their participation in either REALTRAIN or conventional exercises involving rifle squads.

Results indicated that along four of the motivation/satisfaction dimensions (Attitude Toward the Exercises, Military Work Role, Unit Cohesiveness, and Leader Improvement), responses were more positive following participation in REALTRAIN than before participation. In the remaining two dimensions, there was no change in the "before" and "after" measures of motivation/satisfaction. However, for the conventional exercises, there was no change in the before and after responses of participants along five of the dimensions. Along the remaining one, there was a decline in the satisfaction level in the conventional training.

The report is intended for behavioral scientists doing motivation research, as it describes an application and demonstration of existing scientific principles in a field setting.

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**Technical Paper 351**

# **EFFECTS OF COMBAT SIMULATION ON THE WORK-RELATED MOTIVATION/SATISFACTION OF PARTICIPANTS**

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Tactical Skill  
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## FOREWORD

The Engagement Simulation Technical Area of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) has developed a broad program for more effective training of combat units in the Army. The U.S. Army Training and Doctrine Command (TRADOC) has identified training of small units by tactical engagement simulation as one of its highest behavioral science research priorities.

ARI developed a tactical engagement-simulation training method known as REALTRAIN, which provides extremely realistic and motivating training for small combat-arms units. The method is described in ARI Technical Report S-4 and ARI Research Report 1191. *A024 030*

The research reported here was conducted as part of a larger test, which is described in ARI Research Reports 1192, "REALTRAIN Validation for Rifle Squads: Mission Accomplishment," October 1977, and 1203, "REALTRAIN Validation for Rifle Squads II: Tactical Performance," March 1979. *A034 610*

This research was conducted within the December 1976 Five Year Test Program (FYTP) as approved by the Army Test Schedule and Review Committee (TSARC). The entire program is responsive to the requirements of RDTE Projects 2Q763743A773 and 2Q763743A780 and the TRADOC System Manager for Tactical Engagement Simulation of the U.S. Army Training Support Center, Fort Eustis, Va. The research was conducted as part of Army Project 2Q763743A775, with the assistance of George G. Burgess and Donald E. Erwin in developing the motivation-satisfaction instrument. *A043 515*



JOSEPH ZEIDNER  
Technical Director

EFFECTS OF COMBAT SIMULATION ON THE WORK-RELATED MOTIVATION/  
SATISFACTION OF PARTICIPANTS

BRIEF

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Requirement:

To compare the motivation/satisfaction responses of infantry rifle squads trained with REALTRAIN versus conventional field exercises.

Procedure:

In Phase I, 18 rifle squads of nine men each from the 7th Infantry Division at Fort Ord were administered the "before" version of a paper-and-pencil instrument designed to assess six different dimensions of job-related motivation/satisfaction. These units then engaged in a pretest field exercise to establish pretraining performance levels.

Phase II provided the 18 squads with 3 days of carefully coordinated training--REALTRAIN methods for 9 squads and conventional methods for the other 9.

Phase III, the posttest, repeated the pretest on different terrain, to establish performance improvement after training.

In Phase IV, each squad conducted two attacks and two defenses against squads of the other training group (shootoff exercises). During this phase, each participant also completed the "after" version of the motivation/satisfaction instrument.

Findings:

REALTRAIN was found to favorably enhance the motivation and satisfaction responses of participants in four of the six components of their work experience. Conventional training did not positively influence any of the work-related responses of soldiers, but rather had a depressing effect on one (Leader Improvement).



#### Utilization of Findings:

Results of this portion of the field assessment of REALTRAIN provide empirical evidence, gathered under a systematic and comprehensive field research program, of the greater motivation and satisfaction responses elicited by REALTRAIN compared with conventional exercises. Benefits obtainable from REALTRAIN exercises include greater motivation to work, more job satisfaction, and a more positive orientation toward the Army in general.

EFFECTS OF COMBAT SIMULATION ON THE WORK-RELATED MOTIVATION/  
SATISFACTION OF PARTICIPANTS

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EFFECTS OF COMBAT SIMULATION ON THE WORK-RELATED  
MOTIVATION/SATISFACTION OF PARTICIPANTS

INTRODUCTION

Previous research compared REALTRAIN with conventional combined arms training in terms of impact on the subjective reactions of participants.<sup>1</sup> These subjective responses included nine self-report measures of work-related motivation/satisfaction. Soldier responses were obtained either before or after their unit's involvement in week-long sessions of platoon-level REALTRAIN or battalion-level ARTEPS. Participation in REALTRAIN had a significant positive impact on six of the nine motivation/satisfaction dimensions and no effect on the remaining three. On the other hand, conventional exercises in the context of an ARTEP had a positive impact on only one of the nine measures, and a negative influence on six. However, a number of factors precluded direct comparison between the relative merits of REALTRAIN and conventional training. These factors include command level of the training (platoon vs. battalion), differences in training sites (major vs. local), and time of year (winter vs. spring). Consequently, the present investigation attempted to control these extraneous variables, to better determine the relative impacts of REALTRAIN and conventional exercises on soldier motivation/satisfaction.

Detailed descriptions of the REALTRAIN method have been documented in previous ARI publications.<sup>2</sup> Therefore, this report presents only a summary comparison of the REALTRAIN and conventional training methods (see Table 1).

REALTRAIN consists of two-sided, freeplay engagements conducted within prescribed territorial and time constraints and without external interference. All casualties are determined on a near real-time basis by controllers who accompany each squad/crew during engagements. These controllers exchange information via radio regarding player sightings (through a telescope) of numbers appearing on either the helmet of an opposing soldier or a tactical vehicle. The circumstances surrounding casualties are evaluated after each exercise through an extensive participant group discussion called an After Action Review. Finally, similar exercises are repeated during the ensuing training, to allow participants the opportunity to correct previous mistakes.

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<sup>1</sup>Bleda, P. R., and Hayes, J. F. Impact of REALTRAIN and Conventional Combined Arms Exercises on Morale. U.S. Army Research Institute Technical Paper 308, August 1978. (NTIS No. AD A060 559)

<sup>2</sup>Shriver, E. L., Mathers, B. L., Griffin, G. R., Jones, D. R., Word, L. E., Root, R. T., and Hayes, J. F. REALTRAIN: A New Method for Tactical Training of Small Units. ARI Technical Report S-4, December 1975. (NTIS No. AD A024 030)

Table 1

## Comparisons Between REALTRAIN and Conventional Training

Dimensions	REALTRAIN	Conventional
Exercise type	Free-play engagements between opposing forces under only time and territorial constraints	Sequence of prearranged scenarios with a fixed schedule of OPFOR activities and planned execution of combat tasks by tested unit
Casualty assessment	Objective determination of weapons effects, including indirect fire using devices (e.g., scopes, simulators, net control radio system) monitored by controllers. Immediate feedback for "kills." Signatures of various individual and crew-served weapons are simulated	Casualties assessed by subjective judgments of a limited number of umpires
Evaluative feedback	After Action Review conducted after each exercise; involves group discussion about circumstances that surround actions and "kills" inflicted	Evaluative critique of the tested unit by evaluation team after completion of all the exercises
Training procedure	Repetitions of two-sided free-play exercises of increasingly greater difficulty with time set aside for remedial tactical training	One trial performance of a series of specified training tasks



REALTRAIN provides a number of intrinsic rewards to participants. Immediate and objective appraisals of casualties indicate the extent of each performer's contribution to the unit's effectiveness, and how much that contribution influenced the outcome of each engagement.

- Successes and failures that occur within the exercises reflect the actual performance of units rather than subjective judgments of the unit's success in executing predetermined scenarios.
- During the After Action Review, positive and negative peer sanctions can be directed toward individual unit members according to the value of the individual's performance.
- The repetitive nature of the various exercises provides the opportunity for participants to reduce the number of errors they commit and to practice more appropriate behaviors.

Participants often become highly involved in the game of "hitting" an opponent while avoiding becoming a casualty. This competitive, game-like training environment is highly motivating for participants and simultaneously produces behaviors that may increase the probability of survival in an actual combat situation.

As with earlier research, morale was conceptualized as including elements of motivation and satisfaction (Bleda & Hayes, 1978). Motivation was defined as affect anticipated for achieving work goals, and satisfaction was defined as affect actually experienced once goals are obtained. On the basis of previous findings, it was predicted that after completion of REALTRAIN, participants would evidence greater satisfaction than they initially had expected. It also was anticipated that the positive experience that REALTRAIN engendered in participants would generalize to their attitudes toward other facets of their military life (e.g., performance of daily duties and perceptions of unit cohesiveness). In contrast, it was predicted that participation in conventional exercises would have either no effect or a negative influence on the motivation/satisfaction responses of soldiers.

## METHOD

### Design

The overall design of the experiment was a 2 x 2 x 3 mixed factorial that considered the type of training (REALTRAIN vs. conventional), the time of assessing the motivation/satisfaction of participants (before vs. after the exercise), and the training cycle (three cycles in all). The time of assessment (before/after) was a repeated measure in which respondents completed an instrument designed to assess motivation and satisfaction either before or after their participation in the exercises. A total of 128 soldiers in the rank of E-6 or below responded to both administrations of the instrument. The experimental design is given in Appendix A.

### Instrumentation

The motivation/satisfaction instrument included 27 self-report items presented in an attitude-survey type of format. Respondents rated each item along a 5-point scale, on which the values ranged from 1 (strongly disagree) to 5 (strongly agree). This paper-and-pencil instrument was designed to measure the soldier's subjective reactions to both the specific exercises and Army life in general.

The instrument was revised from the 50-item questionnaire administered during previous research. Items that had loaded heavily on the factor analysis were retained, and those that were very similar to others or that were negatively phrased were eliminated. The original 6-point scale was changed to a 5-point scale, and the format was modified from a double column of three scale positions each to a standard linear format having five responses. The "before" form of the instrument differed from the "after" in the four items that pertained specifically to the exercises. Items on the "before" form were worded in the future tense, e.g., "I expect that the training exercises that I am about to begin will be similar to an actual combat situation." These same items were presented in the "after" form in the following manner: "I think that the exercises that I have just completed were similar to an actual combat situation." Thus, responses to the "before" items reflected expectations about the nature of and the benefits to be derived from the forthcoming exercises (motivation), whereas those to the "after" items measured what participants believed they had obtained from the session (satisfaction).

The motivation/satisfaction instrument included other items designed to assess different dimensions related to military job satisfaction. These items were oriented toward the soldier's feelings and perceptions about Army life in general, rather than being narrowly focused on the immediate training exercises. All the items used to assess these general perceptions were presented in the form of positive statements such as "My supervisor is tactically able to perform his combat duties well." Only participants holding positions of authority (i.e., squad leader or fire team leader) completed the four leadership improvement items.

### Procedure

The field test progressed in a series of four phases for each cycle.<sup>3</sup> In Phase I, the pretest established the initial comparability of participating units assigned to either REALTRAIN or conventional training, with regard to initial performance levels. In Phase II training, nine squads received 3 days of REALTRAIN training, while the remaining squads were

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<sup>3</sup>Banks, J. H., Hardy, G. D., Scott, T. D., Kress, G., and Word, L. E. REALTRAIN Validation for Rifle Squads: Mission Accomplishment. ARI Research Report 1192, October 1977. (NTIS No. AD A043 515)

given conventional exercises. Each type of training was given by one of two experienced trainers who, independently, developed a 3-day program of instruction for a movement to contact and hasty defense. In Phase III, posttest, the trained squads met the same special opposition force as in Phase I, in similar offensive and defensive engagements on different terrain. In Phase IV, the individual REALTRAIN squads confronted their conventional counterparts in a series of "shootoffs" involving force-on-force engagements that included two attacks and two defenses for each of the tested units.

## RESULTS

A principal components' factor analysis with varimax rotation was first performed on "before" response (only) to 23 items (4 other items were answered by leader personnel only) collapsed across type of training and cycle conditions. A five-factor solution emerged (with eigenvalues exceeding unity), which accounted for 70% of the variance. Detailed descriptions of each factor dimension are given in Table 2. All items had factor loadings of .5 or above, and these were used to compute a factor score along five dimensions for each soldier. The five factors included responses for all participants; the sixth dimension (Leader Improvement) comprised four items that were completed only by soldiers who held the position of fire team or squad leader.

Separate 2 x 2 x 3 mixed factorial (with two between and one repeated measure) unweighted-means analyses of variance were performed for each of the factor scores. The results indicated that the REALTRAIN and the conventional exercises had a markedly different impact on the motivation/satisfaction of soldiers toward specific training. The mean motivational/satisfaction scores for squads both before and after the two types of training are given in Table 3.

In particular, the "after" responses of REALTRAIN participants with regard to the Attitudes Toward the Exercises dimension were significantly higher ( $p < .001$ ) than those obtained before the exercises. Moreover, the "after" Leader Improvement responses were significantly higher ( $p < .01$ ) than the "before." For the more general dimensions of job-related satisfaction, REALTRAIN training was found to have a significantly favorable impact on measures of Military Work Role ( $p < .05$ ) and Unit Cohesiveness ( $p < .05$ ). For the two remaining dimensions--Satisfaction with Leadership and Career Intentions--there was no significant change in the "before" and "after" measures. Table 4 gives an example (the Attitude Toward Exercise factor) of the analyses of variance that were performed for each factor.

Participation in the conventional exercises had a significant effect--and that effect was negative--on only one of the six motivation and satisfaction dimensions, i.e., Leader Improvement. For this set of responses, the "before" measures were higher than the "after" ones.



Table 2

Description of Morale Dimensions

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ATTITUDE TOWARD EXERCISES (4 items)

Deals with participant perceptions about the immediate exercises in terms of similarity to actual combat conditions, impact on awareness of physical dangers of combat duty, effect on reenlistment intentions, and improving one's ability to perform his combat duties.

MILITARY WORK ROLE (5 items)

Pertains to the soldier's orientation toward assigned duties in the Army with regard to the enjoyment of daily activities, relations with co-workers, challenging working conditions, sense of accomplishment from daily duties, and overall satisfaction with military life.

UNIT COHESIVENESS (7 items)

Reflects commitment that soldiers express toward other unit members in terms of their professional competence, teamwork, helpfulness, cooperativeness, ability to do high-quality work, and effort to do more than enough work to get by.

SATISFACTION WITH LEADERSHIP (5 items)

Corresponds to subordinate's judgment of the behaviors of immediate superiors, such as the latter's flexibility, acceptance of responsibility, awareness of personnel capabilities, and willingness to explain what needs to be done and why it is necessary.

CAREER INTENTIONS (2 items)

Concerned with the soldier's commitment to military service as an acceptable way of life, as reflected in stated intentions to reenlist and to pursue a career in the Army organization.

LEADER IMPROVEMENT (4 items)

Reflects leader perceptions of the exercises' impact on their actions toward subordinates in terms of keeping them informed, explaining what actions are needed and why, and awareness of subordinate capabilities.

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Table 3

Means for Rifle Squads Along Six Motivation/Satisfaction Dimensions

Motivation/satisfaction dimensions	REALTRAIN			Conventional		
	Before	After	Change	Before	After	Change
Attitude toward exercises	3.25	3.99	+	3.31	3.42	none
Military work role	2.99	3.29	+	3.06	3.13	none
Unit cohesiveness	3.51	3.83	+	3.64	3.73	none
Satisfaction with leadership	3.55	3.68	none	3.68	3.67	none
Career intentions	2.44	2.46	none	2.64	2.46	none
Leader improvement	3.64	4.25	+	3.87	3.53	-

Table 4

Analysis of Variance for Attitude Toward Exercise Scores

Source	df	MS	F
Between subjects			
Type of exercise (A)	1	63.71	4.24*
Cycle (B)	2	38.75	2.57
A x B	2	126.11	8.39**
Error between	122	15.03	
Within subjects			
Time of administration (C)	1	184.98	26.99***
A x C	1	102.27	14.92***
B x C	2	22.64	3.30
Error with	122	6.85	

\*  $p < .05$ \*\*  $p < .01$ \*\*\*  $p < .001$

In summary, REALTRAIN was found to favorably enhance the satisfaction of participants in four of the six components of their work experience. On the other hand, conventional training did not positively influence any of the work-related responses of participants; instead it had a depressing effect on one (Leader Improvement responses).

#### DISCUSSION

The results showed that REALTRAIN significantly improved soldier attitudes toward the training. In particular, respondents were more favorable on the Attitudes Toward the Exercises dimension after engaging in REALTRAIN than before. Moreover, Leader Improvement responses were higher after REALTRAIN than before it. Exposure to REALTRAIN also resulted in significantly greater satisfaction with Military Work Role responses, and a heightened sense of esprit de corps, after the training exercises were performed. However, there was no significant difference between the pretraining and posttraining indicators on either satisfaction with leadership or career intentions.

In contrast to responses by REALTRAIN participants, responses by participants in the conventional exercises showed a significant effect on only one of the six motivation/satisfaction dimensions--Leader Improvement. Furthermore, leaders actually had a lower opinion of their own improvement after training than they had expected initially. This finding is in striking contrast to the finding that REALTRAIN training markedly enhanced leader perceptions of their own improvement. It also is remarkable that conventional training did not positively influence any of the work-related responses that were improved by exposure to REALTRAIN.

The REALTRAIN findings of the rifle squads field test are consistent with those of the USAREUR test with combined arms units. That is, participation in REALTRAIN had a favorable impact on attitudes of soldiers toward various facets of their work roles in the Army. This was especially true with regard to their impressions about the benefits to be derived from the REALTRAIN exercises. Moreover, these positive impressions seemed to generalize to the overall Army scene, and, thereby, produce more favorable attitudes toward military life in general.

On comparison of the present REALTRAIN findings to those obtained from the USAREUR field test, two discrepancies become apparent. First, REALTRAIN had a positive impact on soldier perceptions of their Unit Cohesiveness in the present study but not in previous research. An obvious difference between the two investigations is the size of the units involved in the exercises; in the present work, rifle squads were used, whereas for the USAREUR field test combined arms teams participated. Thus it appears that unit size may moderate the positive effect of REALTRAIN on perceptions of Unit Cohesiveness.

The second discrepancy across the two investigations concerned career intentions. In the present study, REALTRAIN participants showed no change in their career intentions as a function of the exercises, whereas participants in the USAREUR field test evidenced more favorable attitudes toward military careers. It is not immediately apparent why combined arms teams in REALTRAIN exercises evidenced more favorable career intentions but rifle squads did not. However, closer inspection of the REALTRAIN results for combined arms teams in USAREUR revealed that most of the improvement in career intentions was evidenced by armor rather than infantry personnel. Therefore, since the present work involved only infantry rifle squads, it is not surprising that these personnel did not show improved career intentions.

The conventionally trained units evidenced no improvement in attitudes along the six motivation/satisfaction dimensions, but they did show a decline in satisfaction with leadership. In contrast, the conventionally trained units in the USAREUR field test evidenced a decline along six of the nine motivation/satisfaction dimensions. The more adverse effects produced by conventional training in the USAREUR, as compared to the present field test, may reflect the level of troop involvement in the respective exercises. In particular, the line troops may have experienced extended periods of inactivity in the combined arms team as compared to the rifle squad exercises. This is because the involvement of higher command levels in ARTEPs typically changes the nature of the testing so that the headquarters and support personnel, but not the line troops, are kept more active.

The success of REALTRAIN as compared to conventional training in terms of developing favorable attitudes among soldiers underscores the need for more intrinsically rewarding combat training. Benefits derived from using the latter type of training exercises include greater motivation to work, more job satisfaction, and a more positive orientation toward the Army in general. These benefits could translate, in turn, to lower rates of personnel turnover and delinquency. It thus appears that an all-volunteer combat force could be maintained more efficiently during peacetime if training programs included more challenging and realistic combat duties. By implementing REALTRAIN techniques the Army could fulfill the expectations of its soldiers as well as expand their commitment to the goals of the modern Army.

# APPENDIX A

## Experimental Design

Training cycle	Type of exercise	<u>Time of survey administration</u>	
		Before	After
1	REALTRAIN	n = 18	n = 18
	Conventional	n = 20	n = 20
2	REALTRAIN	n = 22	n = 22
	Conventional	n = 21	n = 21
3	REALTRAIN	n = 23	n = 23
	Conventional	n = 24	n = 24



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 1 USA Armor Sch, Ft Knox, ATTN: ATSB-DT-TP  
 1 USA Armor Sch, Ft Knox, ATTN: ATSB-CD-AD  
 2 HQUACDEC, Ft Ord, ATTN: Library  
 1 HQUACDEC, Ft Ord, ATTN: ATEC-EX-E-Hum Factors  
 2 USAEEC, Ft Benjamin Harrison, ATTN: Library  
 1 USAPACDC, Ft Benjamin Harrison, ATTN: ATCP-HR  
 1 USA Comm-Elect Sch, Ft Monmouth, ATTN: ATSN-EA  
 1 USAEC, Ft Monmouth, ATTN: AMSEL-CT-HDP  
 1 USAEC, Ft Monmouth, ATTN: AMSEL-PA-P  
 1 USAEC, Ft Monmouth, ATTN: AMSEL-SI-CB  
 1 USAEC, Ft Monmouth, ATTN: C, Fac Dev Br  
 1 USA Materials Sys Anal Agcy, Aberdeen, ATTN: AMXSYP-P  
 1 Edgewood Arsenal, Aberdeen, ATTN: SAREA-BL-H  
 1 USA Ord Ctr & Sch, Aberdeen, ATTN: ATSL-TEM-C  
 2 USA Hum Engr Lab, Aberdeen, ATTN: Library/Dir  
 1 USA Combat Arms Tng Bd, Ft Benning, ATTN: Ad Supervisor  
 1 USA Infantry Hum Rsch Unit, Ft Benning, ATTN: Chief  
 1 USA Infantry Bd, Ft Benning, ATTN: STEBC-TE-T  
 1 USASMA, Ft Bliss, ATTN: ATSS-LRC  
 1 USA Air Def Sch, Ft Bliss, ATTN: ATSA-CTD-ME  
 1 USA Air Def Sch, Ft Bliss, ATTN: Tech Lib  
 1 USA Air Def Bd, Ft Bliss, ATTN: FILES  
 1 USA Air Def Bd, Ft Bliss, ATTN: STEBD-PO  
 1 USA Cmd & General Stf College, Ft Leavenworth, ATTN: Lib  
 1 USA Cmd & General Stf College, Ft Leavenworth, ATTN: ATSW-SE-L  
 1 USA Cmd & General Stf College, Ft Leavenworth, ATTN: Ed Advisor  
 1 USA Combined Arms Cmbt Dev Act, Ft Leavenworth, ATTN: DepCdr  
 1 USA Combined Arms Cmbt Dev Act, Ft Leavenworth, ATTN: CCS  
 1 USA Combined Arms Cmbt Dev Act, Ft Leavenworth, ATTN: ATCASA  
 1 USA Combined Arms Cmbt Dev Act, Ft Leavenworth, ATTN: ATCACO-F  
 1 USA Combined Arms Cmbt Dev Act, Ft Leavenworth, ATTN: ATCACC-C  
 1 USAECOM, Night Vision Lab, Ft Belvoir, ATTN: AMSEL-NV-SD  
 3 USA Computer Sys Cmd, Ft Belvoir, ATTN: Tech Library  
 1 USAMERDC, Ft Belvoir, ATTN: STSFB-DQ  
 1 USA Eng Sch, Ft Belvoir, ATTN: Library  
 1 USA Topographic Lab, Ft Belvoir, ATTN: ETL-TD-S  
 1 USA Topographic Lab, Ft Belvoir, ATTN: STINFO Center  
 1 USA Topographic Lab, Ft Belvoir, ATTN: ETL-GSL  
 1 USA Intelligence Ctr & Sch, Ft Huachuca, ATTN: CTD-MS  
 1 USA Intelligence Ctr & Sch, Ft Huachuca, ATTN: ATS-CTD-MS  
 1 USA Intelligence Ctr & Sch, Ft Huachuca, ATTN: ATSI-TE  
 1 USA Intelligence Ctr & Sch, Ft Huachuca, ATTN: ATSI-TEX-GS  
 1 USA Intelligence Ctr & Sch, Ft Huachuca, ATTN: ATSI-CTS-OR  
 1 USA Intelligence Ctr & Sch, Ft Huachuca, ATTN: ATSI-CTD-DT  
 1 USA Intelligence Ctr & Sch, Ft Huachuca, ATTN: ATSI-CTD-CS  
 1 USA Intelligence Ctr & Sch, Ft Huachuca, ATTN: DAS/SD  
 1 USA Intelligence Ctr & Sch, Ft Huachuca, ATTN: ATSI-TEM  
 1 USA Intelligence Ctr & Sch, Ft Huachuca, ATTN: Library  
 1 CDR, HQ Ft Huachuca, ATTN: Tech Ref Div  
 2 CDR, USA Electronic Prvg Grd, ATTN: STEEP-MT-S  
 1 HQ, TCATA, ATTN: Tech Library  
 1 HQ, TCATA, ATTN: AT CAT-OP-Q, Ft Hood  
 1 USA Recruiting Cmd, Ft Sheridan, ATTN: USARCPM-P  
 1 Senior Army Adv., USAFAGOD/TAC, Elgin AF Aux Fid No. 9  
 1 HQ USARPAC, DCSPER, APO SF 96558, ATTN: GPPE-SE  
 1 Stimson Lib, Academy of Health Sciences, Ft Sam Houston  
 1 Marine Corps Inst., ATTN: Dean-MCI  
 1 HQUSSMC, Commandant, ATTN: Code MTMT  
 1 HQUSSMC, Commandant, ATTN: Code MPI-20-28  
 2 USCG Academy, New London, ATTN: Admission  
 2 USCG Academy, New London, ATTN: Library  
 1 USCG Training Ctr, NY, ATTN: CO  
 1 USCG Training Ctr, NY, ATTN: Educ Svc Ofc  
 1 USCG, Psychol Res Br, DC, ATTN: GP 1/62  
 1 HQ Mid-Range Br, MC Det, Quantico, ATTN: P&S Div

1 US Marine Corps Liaison Ofc, AMC, Alexandria, ATTN: AMCGS-F  
 1 USATRADOC, Ft Monroe, ATTN: ATRO-ED  
 6 USATRADOC, Ft Monroe, ATTN: ATPR-AD  
 1 USATRADOC, Ft Monroe, ATTN: ATTS-EA  
 1 USA Forces Cmd, Ft McPherson, ATTN: Library  
 2 USA Aviation Test Bd, Ft Rucker, ATTN: STEBG-PO  
 1 USA Agcy for Aviation Safety, Ft Rucker, ATTN: Library  
 1 USA Agcy for Aviation Safety, Ft Rucker, ATTN: Educ Advisor  
 1 USA Aviation Sch, Ft Rucker, ATTN: PO Drawer O  
 1 HQUSA Aviation Sys Cmd, St Louis, ATTN: AMSAV-ZDR  
 2 USA Aviation Sys Test Act., Edwards AFB, ATTN: SAVTE-T  
 1 USA Air Def Sch, Ft Bliss, ATTN: ATSA TEM  
 1 USA Air Mobility Rsch & Dev Lab, Moffett Fld, ATTN: SAVDL-AS  
 1 USA Aviation Sch, Res Tng Mgt, Ft Rucker, ATTN: ATST-T-RTM  
 1 USA Aviation Sch, CO, Ft Rucker, ATTN: ATST-D-A  
 1 HQ, DARCOM, Alexandria, ATTN: AMXCD-TL  
 1 HQ, DARCOM, Alexandria, ATTN: CDR  
 1 US Military Academy, West Point, ATTN: Serials Unit  
 1 US Military Academy, West Point, ATTN: Ofc of Milt Ldrshp  
 1 US Military Academy, West Point, ATTN: MAOR  
 1 USA Standardization Gp, UK, FPO NY, ATTN: MASE-GC  
 1 Ofc of Naval Rsch, Arlington, ATTN: Code 452  
 3 Ofc of Naval Rsch, Arlington, ATTN: Code 458  
 1 Ofc of Naval Rsch, Arlington, ATTN: Code 450  
 1 Ofc of Naval Rsch, Arlington, ATTN: Code 441  
 1 Naval Aerosp Med Res Lab, Pensacola, ATTN: Acous Sch Div  
 1 Naval Aerosp Med Res Lab, Pensacola, ATTN: Code L51  
 1 Naval Aerosp Med Res Lab, Pensacola, ATTN: Code L5  
 1 Chief of NavPers, ATTN: Pers-OR  
 1 NAVAIRSTA, Norfolk, ATTN: Safety Ctr  
 1 Nav Oceanographic, DC, ATTN: Code 6251, Charts & Tech  
 1 Center of Naval Anal, ATTN: Doc Ctr  
 1 NavAirSysCom, ATTN: AIR-5313C  
 1 Nav BuMed, ATTN: 713  
 1 NavHelicopterSubSqua 2, FPO SF 96601  
 1 AFHRL (FT) William AFB  
 1 AFHRL (TT) Lowry AFB  
 1 AFHRL (AS) WPAFB, OH  
 2 AFHRL (DOJZ) Brooks AFB  
 1 AFHRL (DOJN) Lackland AFB  
 1 HQUSAF (INYSO)  
 1 HQUSAF (DPXXA)  
 1 AFVTG (RD) Randolph AFB  
 3 AMRL (HE) WPAFB, OH  
 2 AF Inst of Tech, WPAFB, OH, ATTN: ENE/SL  
 1 ATC (XPTD) Randolph AFB  
 1 USAF AeroMed Lib, Brooks AFB (SUL-4), ATTN: DOC SEC  
 1 AFOSR (NL), Arlington  
 1 AF Log Cmd, McClellan AFB, ATTN: ALC/DPCRB  
 1 Air Force Academy, CO, ATTN: Dept of Bel Scn  
 5 NavPers & Dev Ctr, San Diego  
 2 Navy Med Neuropsychiatric Rsch Unit, San Diego  
 1 Nav Electronic Lab, San Diego, ATTN: Res Lab  
 1 Nav TrngCen, San Diego, ATTN: Code 9000-Lib  
 1 NavPostGraSch, Monterey, ATTN: Code 55Aa  
 1 NavPostGraSch, Monterey, ATTN: Code 2124  
 1 NavTrngEquipCtr, Orlando, ATTN: Tech Lib  
 1 US Dept of Labor, DC, ATTN: Manpower Admin  
 1 US Dept of Justice, DC, ATTN: Drug Enforce Admin  
 1 Nat Bur of Standards, DC, ATTN: Computer Info Section  
 1 Nat Clearing House for MH-Info, Rockville  
 1 Denver Federal Ctr, Lakewood, ATTN: BLM  
 12 Defense Documentation Center  
 4 Dir Psych, Army Hq, Russell Ofcs, Canberra  
 1 Scientific Advsr, Mil Bd, Army Hq, Russell Ofcs, Canberra  
 1 Mil and Air Attache, Austrian Embassy  
 1 Centre de Recherche Des Facteurs Humaine de la Defense Nationale, Brussels  
 2 Canadian Joint Staff Washington  
 1 C/Air Staff, Royal Canadian AF, ATTN: Pers Std Anal Br  
 3 Chief, Canadian Def Rsch Staff, ATTN: C/CRDS(W)  
 4 British Def Staff, British Embassy, Washington  
 1 Def & Civil Inst of Enviro Medicine, Canada  
 1 AIR CRESS, Kensington, ATTN: Info Sys Br  
 1 Militærpsykologisk Tjeneste, Copenhagen  
 1 Military Attache, French Embassy, ATTN: Doc Sec  
 1 Medecin Chef, C.E.R.P.A.,-Arsenal, Toulon/Naval France  
 1 Prin Scientific Off, Appl Hum Engr Rsch Div, Ministry of Defense, New Delhi  
 1 Pers Rsch Ofc Library, AKA, Israel Defense Forces  
 1 Ministeris van Defensie, DOOP/KL Afd Sociaal Psychologische Zaken, The Hague, Netherlands